



The state-of-the-art multi-spectral infrared technology of ESP Safety's Model IPES-IR4000 Flame Detector affords the highest sensitivity in detecting flames from combustible vapors gases within its 120° conical field of view.

IPES-IR4000's advanced detection technology ensures rapid flame recognition and alarm signaling. In addition, **IPES-IR4000's** selective, multi-spectral technology virtually eliminates false alarms. It ignores false triggers from sources such as direct or indirect sunlight, arc welder flash, resistive heaters, fluorescent, halogen, and incandescent light.

IPES-IR4000 sends an alarm only when data from multiple different IR wavelengths agree that a flame or fire is present in the field of view. Upon confirmation of flame or fire, the **IPES-IR4000** transfers alarm signals to receiving control devices located in control and operations rooms and to fire alarms and burglar/fire alarm systems.

While operating, the **IPES-IR4000** transmits detector-status information via:

- Source analog 4-20mA output
- A standard RS-485 communication channel under protocol Modbus RTU
- HART Communication
- Relay outputs

The **IPES-IR4000** Flame Detector is constructed with an explosion-proof housing for use in hazardous (classified) locations.

Features and Benefits

- 120° field of view (FOV) provides a wider area of coverage.
- Multi-spectral IR detection provides the highest level of flame and fire sensitivity.
- Multi-spectral IR detection provides optimal rejection of false alarms.
- Power-on self-test and frequent sensor self-test ensure system integrity and correct operation.
- Heated optics, secondary heater function helps to prevent condensation problems.
- Explosion-proof package allows for hazardous environment operation.
- Tri-color status LED on the device is easily viewable for a visual report of the device's operating status.
- Continuous monitoring of the optical path for obstruction or reduced transmission affords maximum reliability.
- Power consumption of <3W means low power costs, protection against surges.
- Digital, analog and relay outputs provide reliable status information across a range of communication formats.
- Industry standard for remote alarm and fault indication ensure reliability and consistency.
- Extended detection range provides a greater area of protection.
- Expected life > 10 years
- 5-year warranty — long, reliable product life; low cost to operate over time.

Applications

- Drilling and production platforms
- Shipping tankers, freighters, and other vessels
- Fuel loading facilities
- Refineries, bulk terminals, and tank farms
- LNG/LPG processing and storage facilities
- Compressor stations and pipeline facilities
- Petrochemical, paint, and fertilizer plants
- Power plants and gas turbine facilities
- Transportation facilities (airports and subways)
- Oil and gas fired boilers / furnaces
- Aircraft hangars

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ELECTRICAL SPECIFICATION

Supply Voltage	+24VDC Nominal (+18 to 32 VDC)	
Power Consumption	Standby	<2 W
	Alarm	<3 W
	with heater on maximum	<7.5 W
Analog Outputs	Analogue Signal 4-20mA sourcing NAMUR NE43 (sinking configuration available on request)	
	Circuit Opening	0 mA \pm 0.1 mA
	Dust/blockage/Fault signal	2 mA \pm 0.1 mA
	Normal / Standby Mode signal	4 mA \pm 0.1 mA
	Fire signal	20 mA \pm 0.1 mA
	Self-Test-Every 25 to 45 minutes	4.1 mA \pm 0.1 mA
HART Communication	HART protocol Version 7	
Digital Outputs	RS 485, Modbus RTU	
Relay Contact	Fire Alarm: One normally open / normally closed (NO/NC) user selectable, latching or non-latching. Fault: One normally open / normally closed (NO/NC) user selectable Normally Energized	
Wiring	14 AWG (2.5 sq.mm) or 16 AWG (1.5 sq.mm) Shielded cable is recommended	
Terminals	14 AWG - 2.5 sq.mm	

FUNCTIONAL SPECIFICATION

Wavelengths	4.0 to 5.0 μ m
Detector Range-Distance	Maximum 345 feet (105meters), depending on detected fuel
Cone of Vision	120 degrees (Horizontal / Vertical)
Response Time	3 sec. typically
Optical Integrity	Automatic and Manual built in test
Local Indication	Alarm status indication - LED indicator
Self-Test and Diagnostics	Self-Test-Every 25 to 45 minutes
False Alarm Immunity	Integrated

MECHANICAL SPECIFICATION

Material	316SSL Electropolished Marine Grade 6061 aluminum alloy RAL3000
Conduit Connection	Two (2) M20 X 1.5, (3/4" NPT with adapter)
Dimensions	3.94"x 9.08"x 14.2" (with Mounting Bracket) 100 x 231 x 361 mm (with Mounting Bracket)
Weight	316 SSL: 11 lbs (5 kg) Aluminum: 5.5 lbs (2.5 kg)
Ingress Protection	IP66
Warranty	5 years

ENVIRONMENTAL SPECIFICATION

Operating Temperature	-40°F to +185°F (-40°C to +85°C)
Extended Operating Temperature (By Request)	-76°F to +257°F (-60°C to +125°C)
Storage Temperature	-76°F to +185°F (-60°C to +85°C)
Humidity	0 to 95% relative humidity (can withstand 100% condensing humidity for short periods of time) - tropicalized/conformal coated electronics G3

PERFORMANCE

EMC/RFI	Complies with IEC 61000-6-2 and 4
Performance reference standard	According to FM3260 and EN54-10

APPROVALS

North America	FM: Class I, Division 1 Groups B, C & DT4 Ta = -40°F to +167°F (-40°C to +75°C), IP66
	ABS: Class I, Division 1 Groups B, C & D T4 Ta = -40°F to +167°F (-40°C to +75°C), IP66
European	ATEX: Ex d IIC T4 -40°F to +185°F (-40°C to +85°C) CE Mark for EMC (TUV), CE Mark for IECEx, IP66
International	IEC, IECEx: Ex d IIC T4 -40°F to +185°F (-40°C to +85°C) IP66
EN Standard	EN 54-10:2002 + A1 :2005
SIL Rating	IEC61508 SIL Assessment SIL 3
UAE	ECAS-Ex

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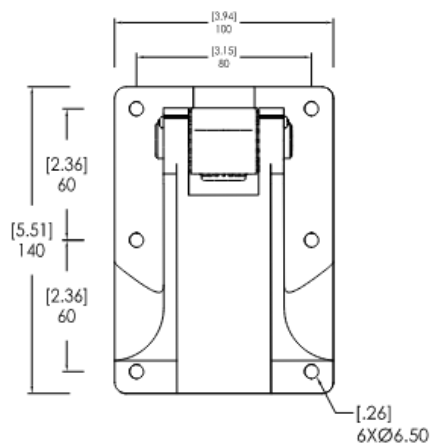
ESP Safety

IPES IR4000

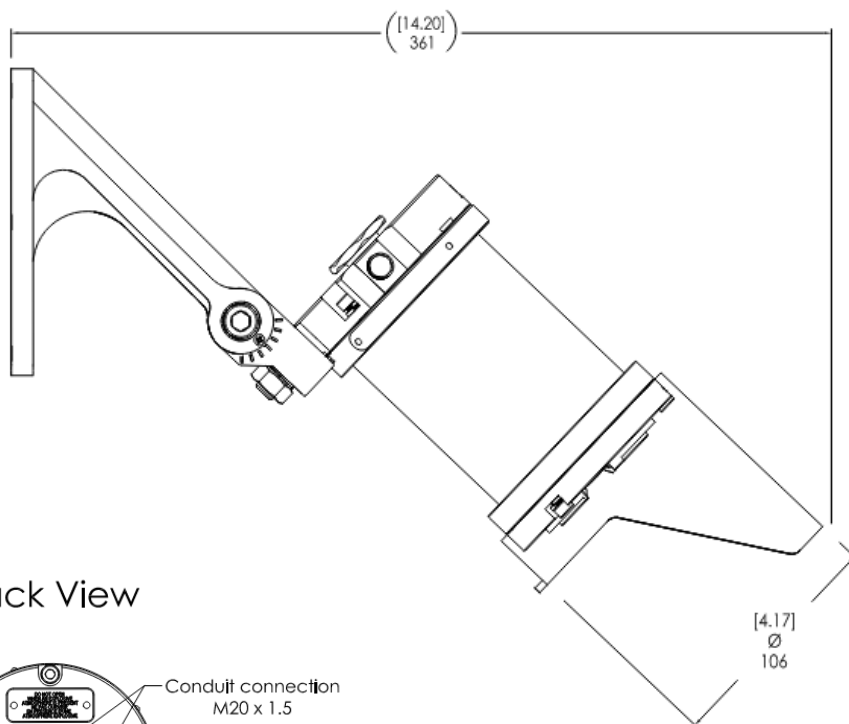
FLAME DETECTOR

GENERAL ARRANGEMENT DRAWING

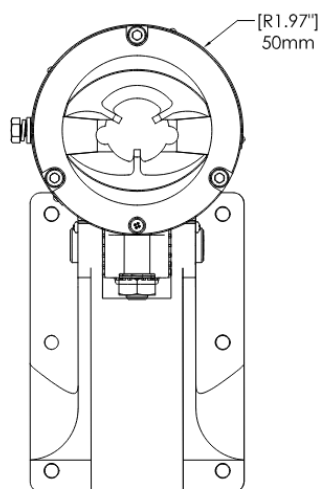
MOUNTING BRACKET



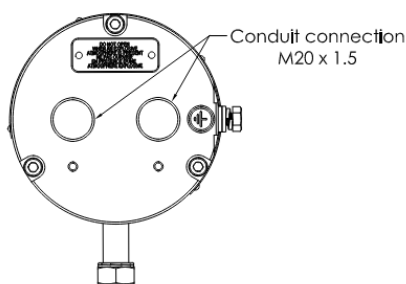
Side View



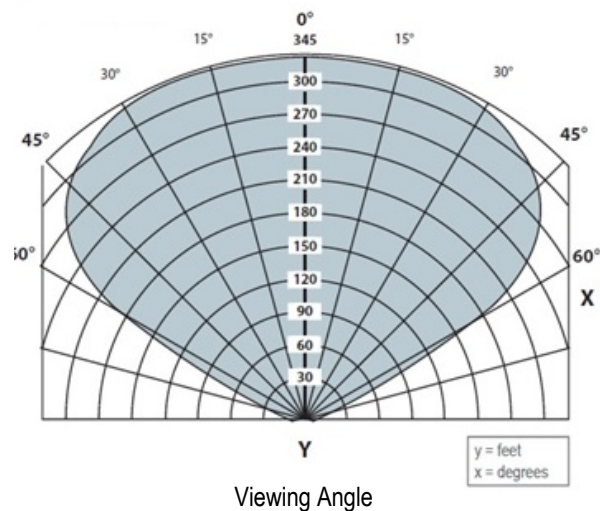
Front View



Back View



DETECTION CONE OF VISION



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SKU parts included in each configuration:

- P/N 125-0005 Visor
- P/N 125-0019 Mounting Bolts (qty 4)
- P/N 125-0003 $\pm 45^\circ$ adjustable Mounting Bracket

Accessories:

- P/N 125-0041-CS Universal 2" Pole mounting plate
Includes Steel Galvanized Mounting and U-bolts for 2" Pole mount (Qty 2)
- P/N 125-0041-SS Universal 2" Pole mounting plate
Includes SS316L Mounting Plate and U-bolts for 2" Pole mount (Qty 2)
- P/N 120-0092-AL Awning Shield GRP
- P/N 120-0092-SS Awning Shield Stainless Steel
- P/N 120-0084-AL Vortex Air Shield Aluminum
- P/N 120-0085 Vortex Air Shield Stainless Steel
- P/N 120- 0027 Plug M20**
- P/N 120- 0026 M20 male to 3/4 NPT female reducer**

(**) adapters and plugs are available in nickel plated brass and stainless steel

Spare Part:

- P/N 125-0005 Protective Visor for Flame Detector
- P/N 125-0019 Mounting Bolts (Qty 4)
- P/N 125-0003 IPES Mounting Bracket, Stainless Steel
- P/N 333-0037 Terminal Block IPES Connector

Tools:

- P/N 120-0006 Magnetic Collar
- P/N 120-0077 4 mm Hex Wrench
- P/N 120-0093 Field of View Alignment Tool
- P/N 120-0007 ITES Dual emission source test flashlight for flame detector
- P/N 260-0009 Cable Assembly, HART Communicator

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